

Fig. 1

FIG. 2

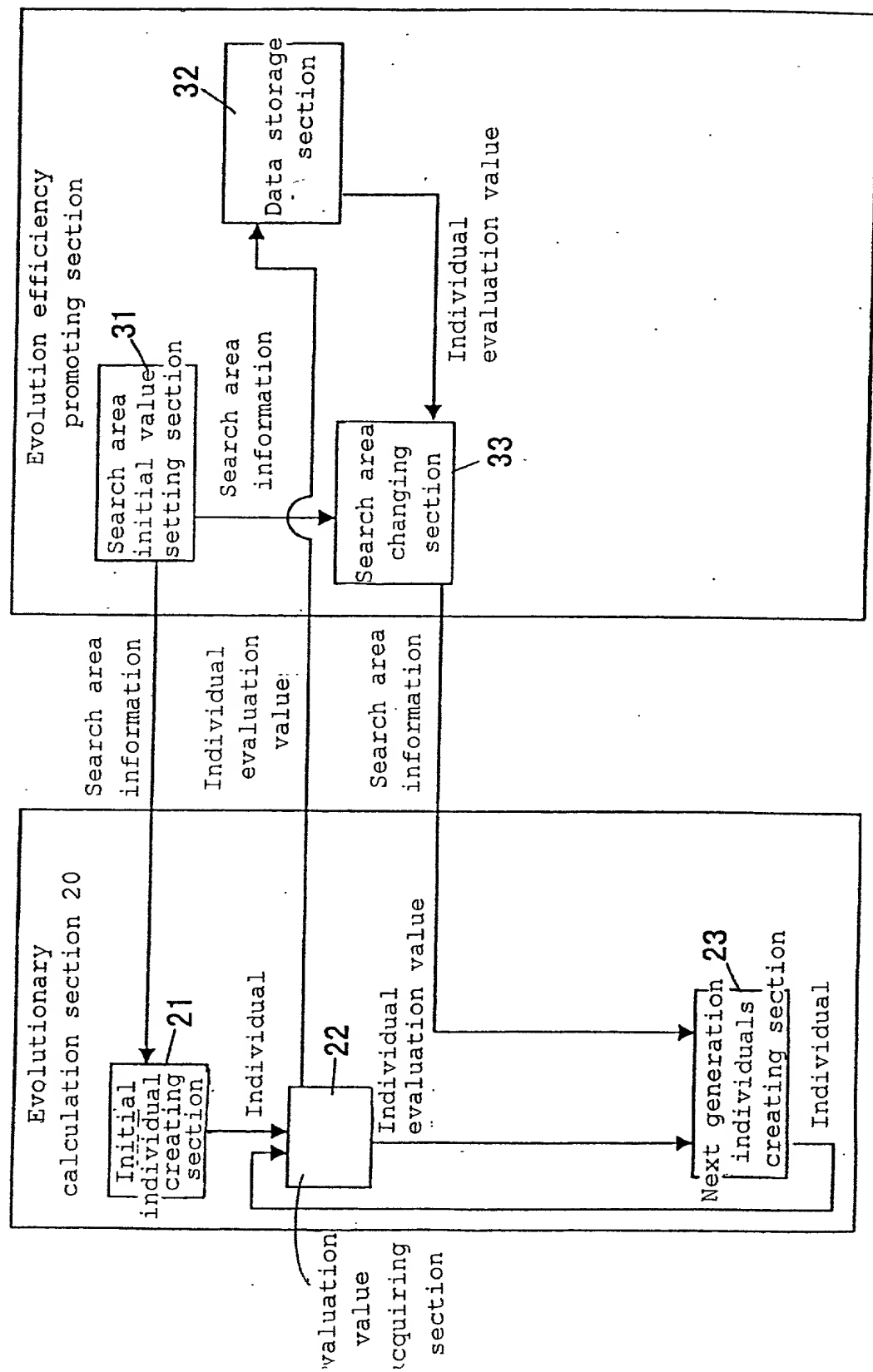
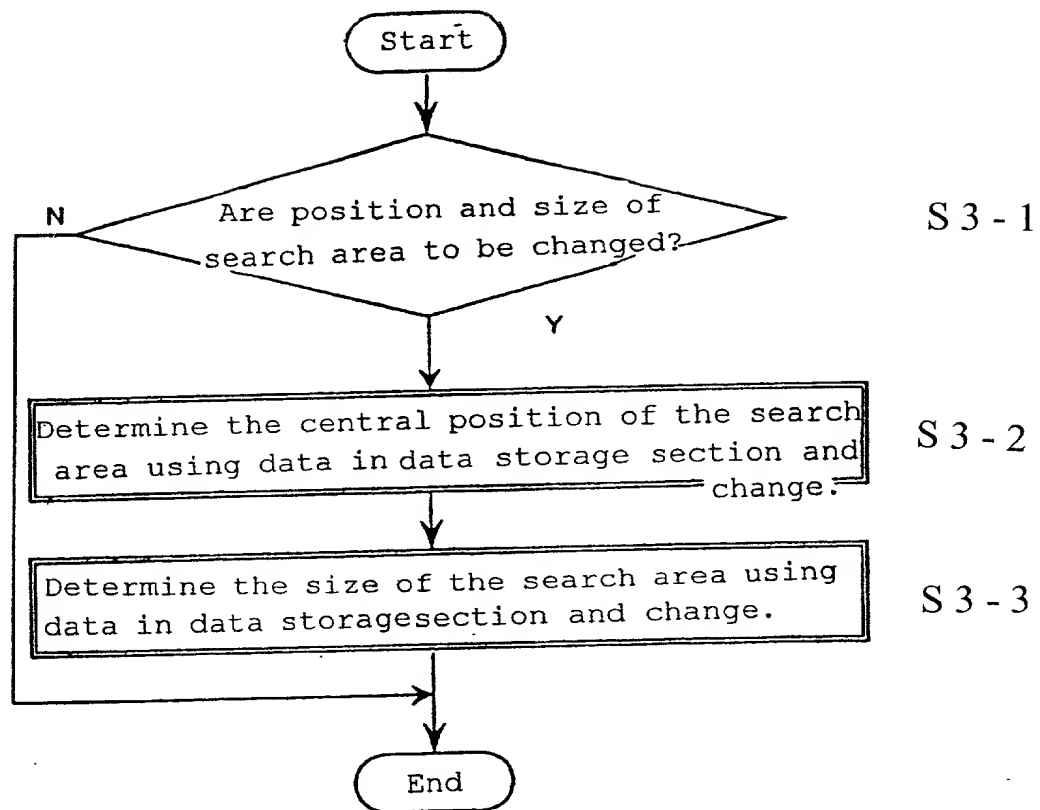


FIG. 3



① Change based on current size

Best evaluation value $Y$ of $i$ -th generation	Search area size (Amount of change in center-to-edged distance)	
	X1 direction	X2 direction
$0 \leq Y < 20$	+20	+10
$20 \leq Y < 40$	+10	+5
$40 \leq Y < 70$	0	0
$70 \leq Y \leq 100$	-10	-5

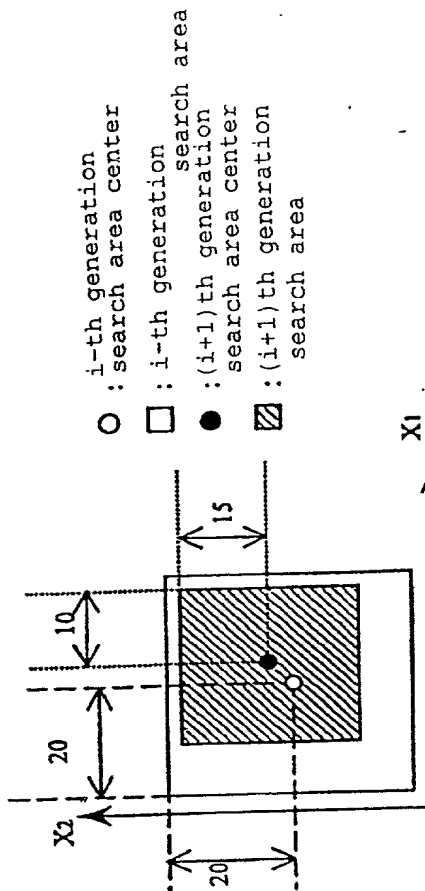


FIG. 4A(a)

FIG. 4A(b)

② Change irrespective of current size

Best evaluation value $Y$ of $i$ -th generation	Search area size (Amount of change in center-to-edged distance)	
	X1 direction	X2 direction
$0 \leq Y < 20$	25	30
$20 \leq Y < 40$	20	25
$40 \leq Y < 70$	15	20
$70 \leq Y \leq 100$	10	15

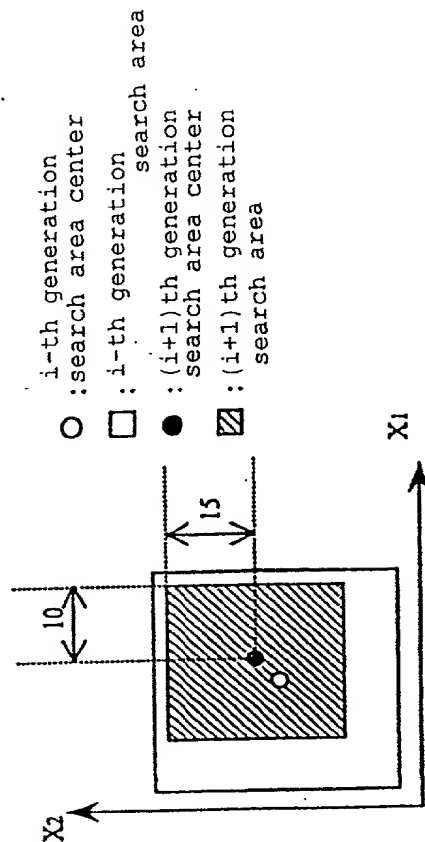


FIG. 4B(a)

FIG. 4B(b)

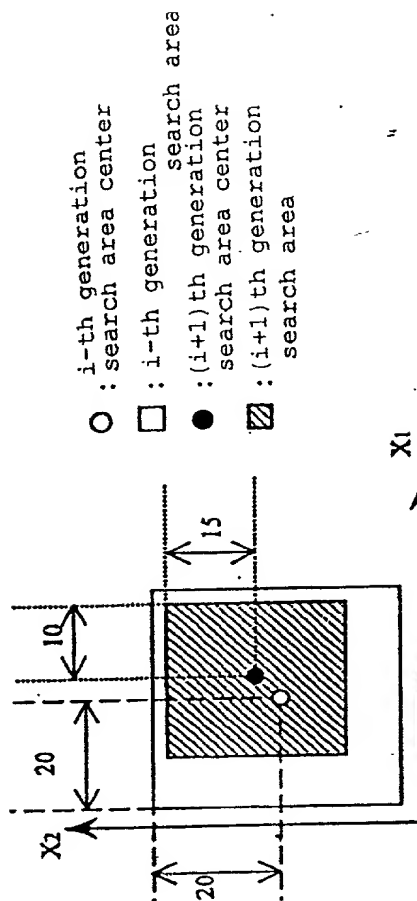


FIG. 5A(b)

① Change based on current size

Shift distance of search area (d) of search area center position	Search area size (Amount of change in center-to-edged distance)	
	X1 direction	X2 direction
$60 \leq d$	+20	+10
$40 \leq d < 60$	+10	+5
$20 \leq d < 40$	0	0
$0 \leq d < 20$	-10	-5

FIG. 5A(a)

② Change irrespective of current size

Shift distance of search area (d) of search area center position	Search area size (Amount of change in center-to-edged distance)	
	X1 direction	X2 direction
$60 \leq d$	25	30
$40 \leq d < 60$	20	25
$20 \leq d < 40$	15	20
$0 \leq d < 20$	10	15

FIG. 5B(a)

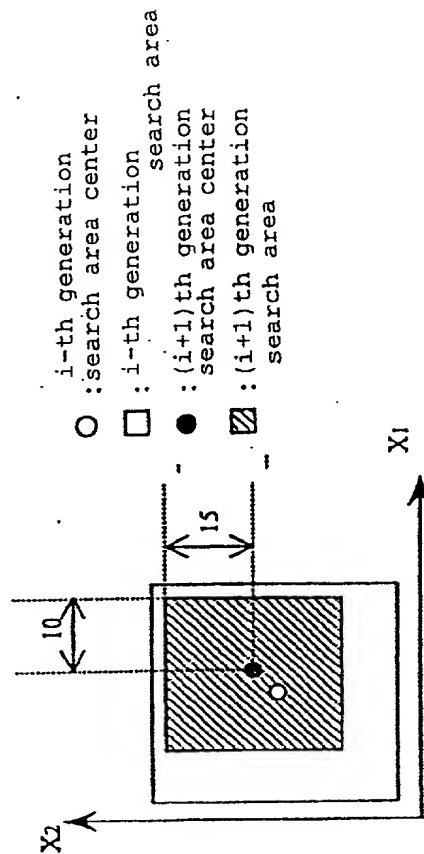


FIG. 5B(b)

- : i-th generation search area center
- : i-th generation search area
- : (i+1)th generation search area center
- ▨ : (i+1)th generation search area

① Change based on current size

Center position of next generation search area in current search area	Search area size (Amount of change in center-to-edged distance)
In area from 75% to 100%	+20
In area from 50% to 75%	+10
In area from 25% to 50%	0
In area from 0% to 25%	-10
	-5

FIG. 6A(a)

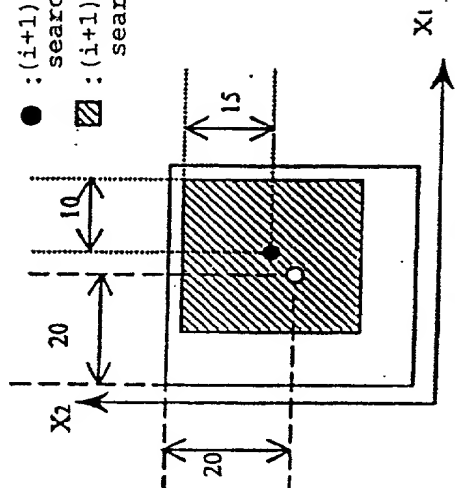


FIG. 6A(b)

② Change irrespective of current size

Center position of next generation search area in current search area	Search area size (Amount of change in center-to-edged distance)
In area from 75% to 100%	25
In area from 50% to 75%	20
In area from 25% to 50%	15
In area from 0% to 25%	10
	15

FIG. 6B(a)

- : i-th generation search area center
- : i-th generation search area
- : (i+1)th generation search area center
- ▨ : (i+1)th generation search area

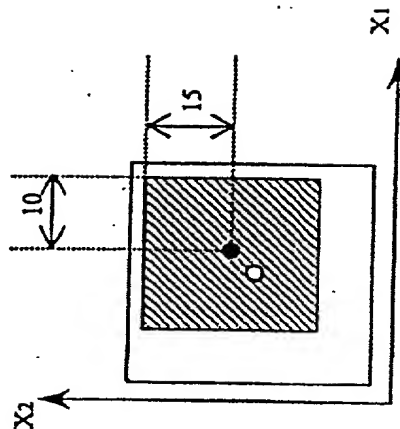


FIG. 6B(b)

FIG. 7

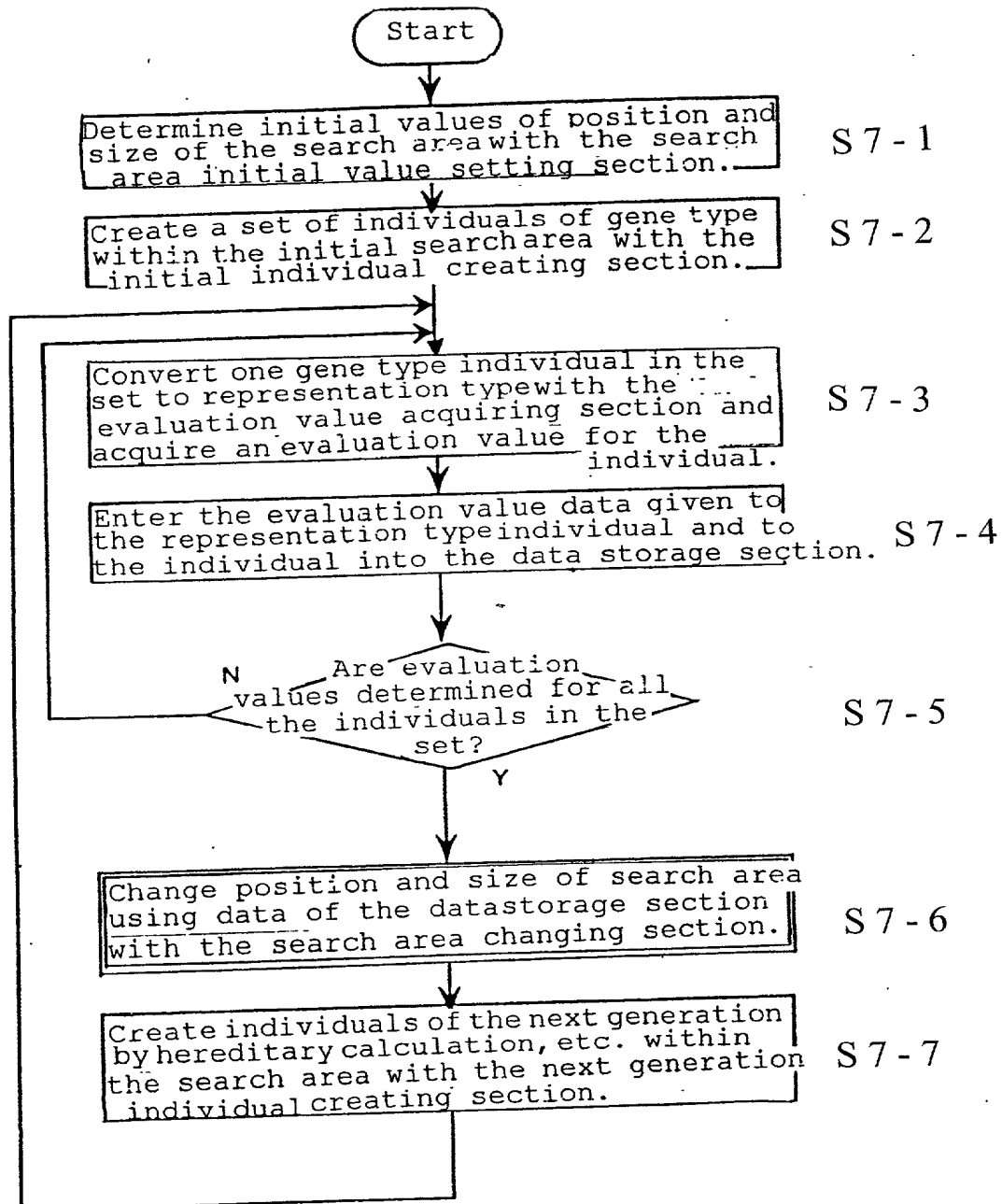


FIG. 8

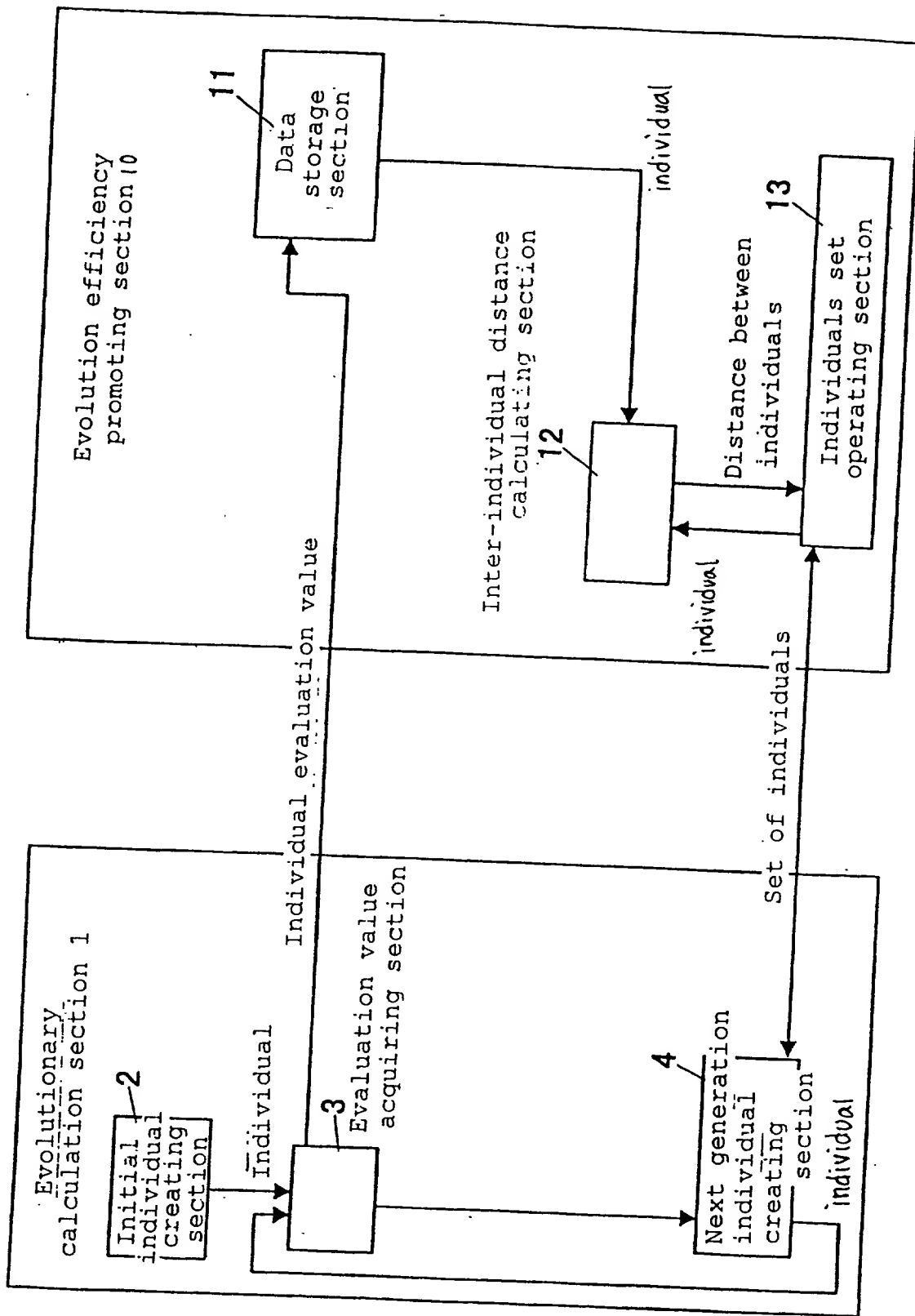




FIG. 9

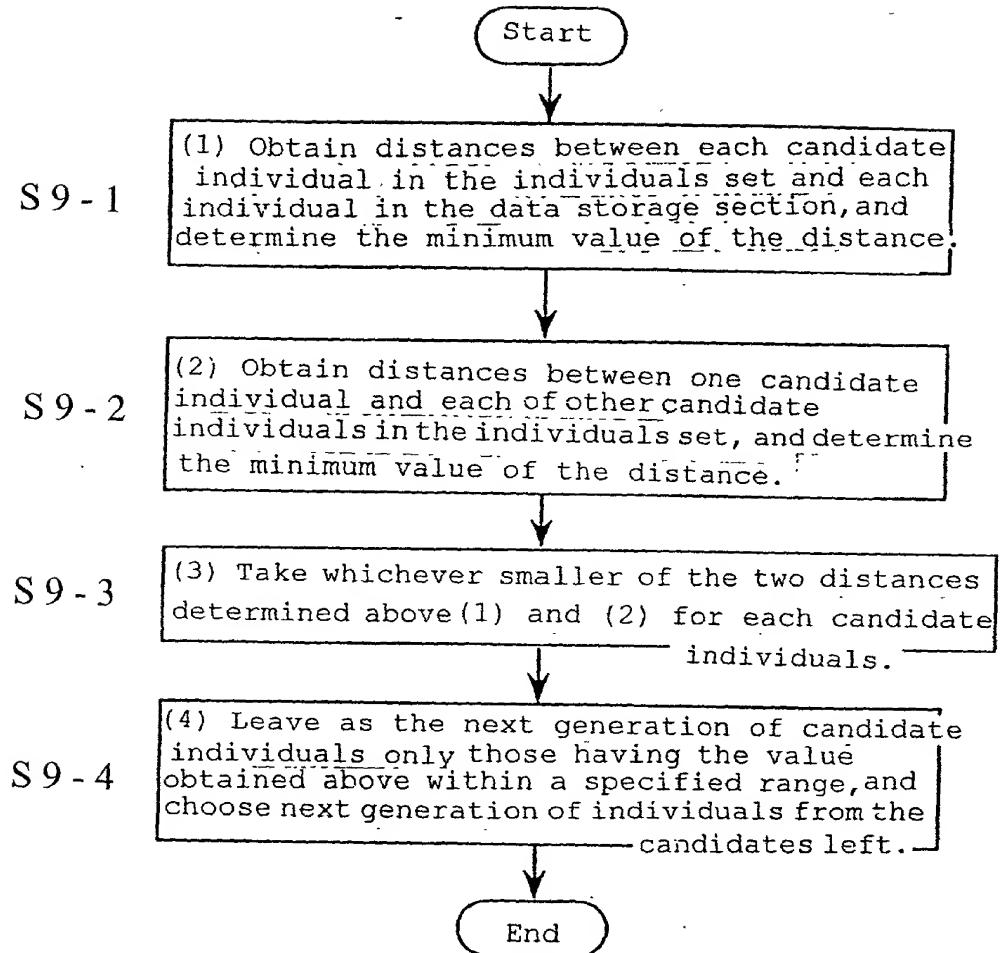


FIG. 10(a)

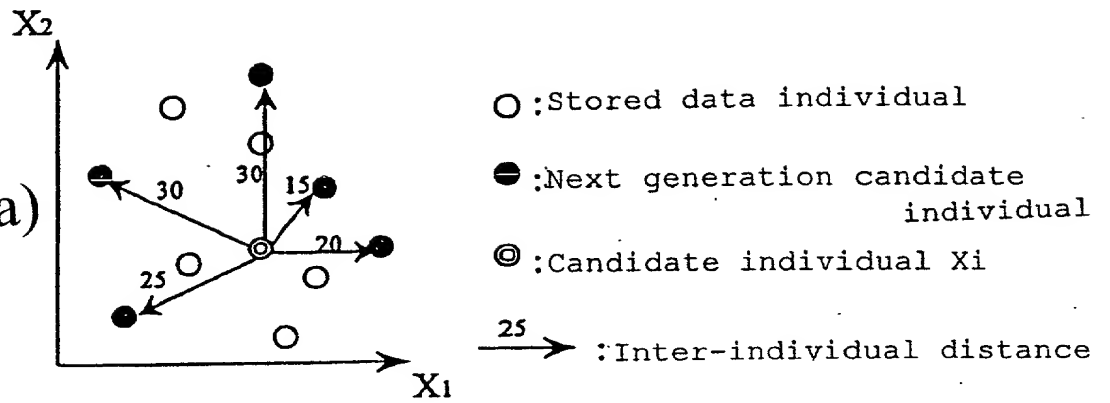


FIG. 10(b)

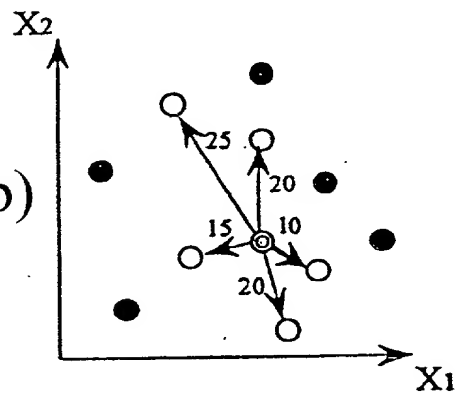


FIG. 11

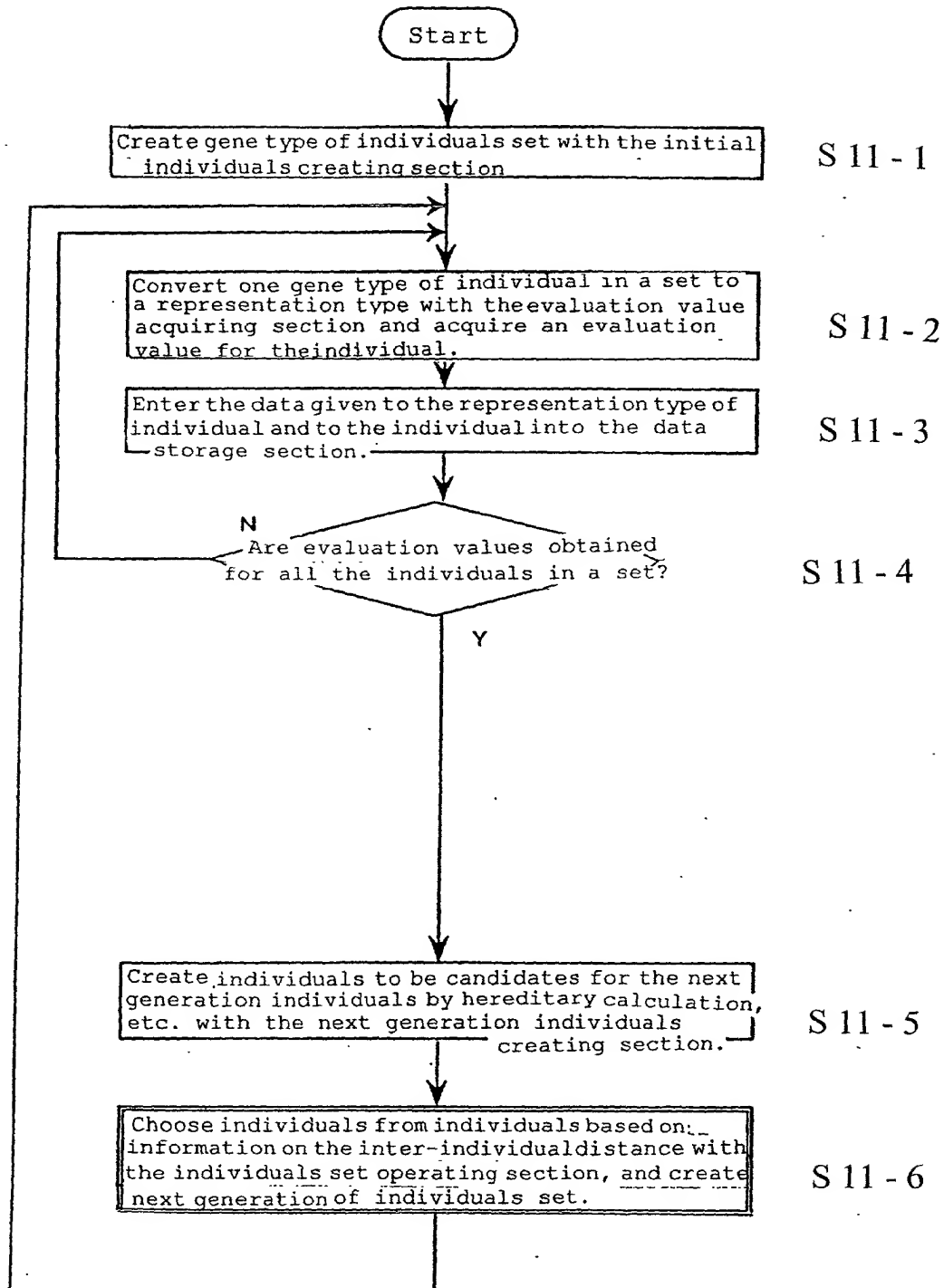


FIG. 12

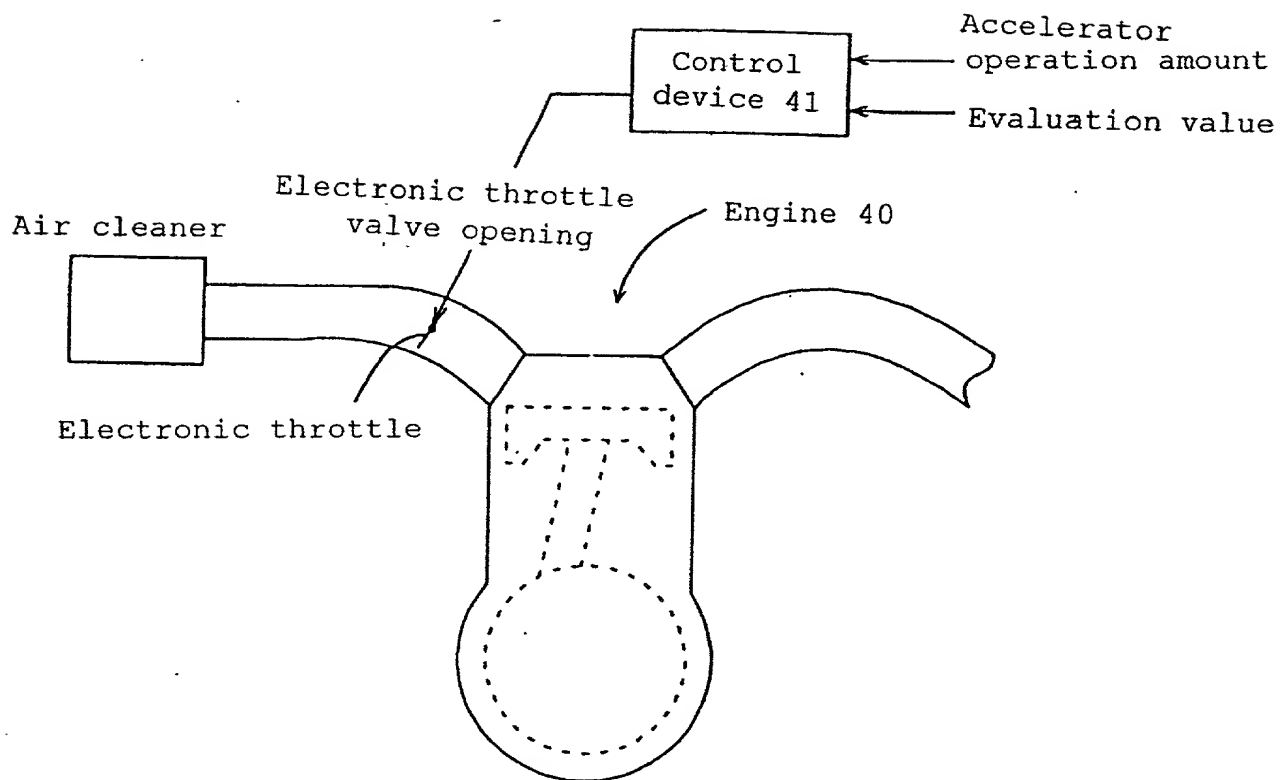
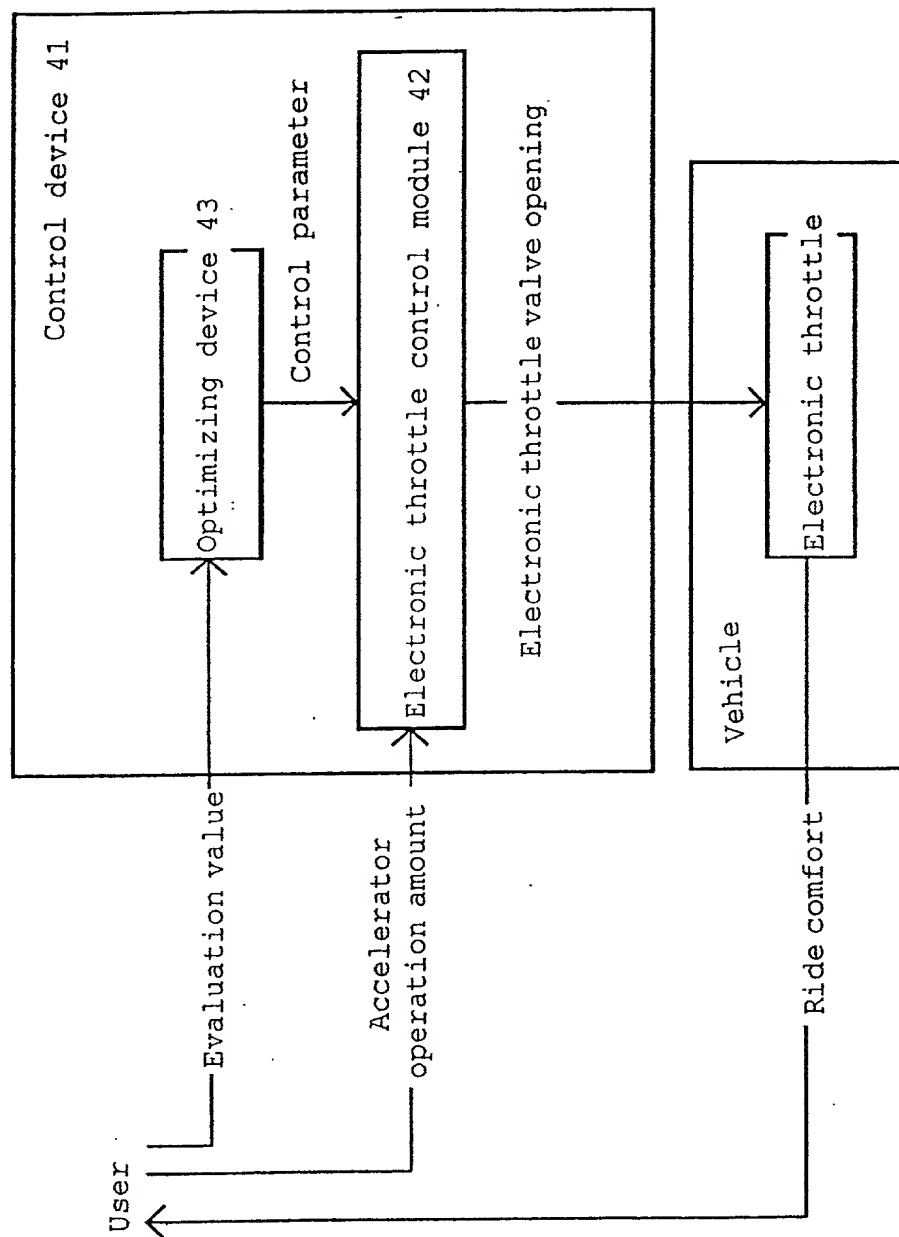
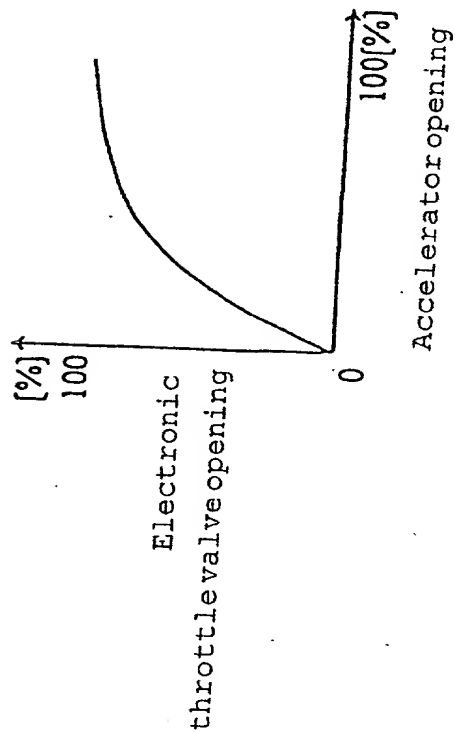


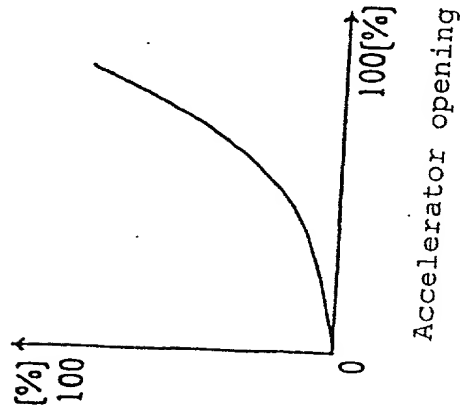
FIG. 13



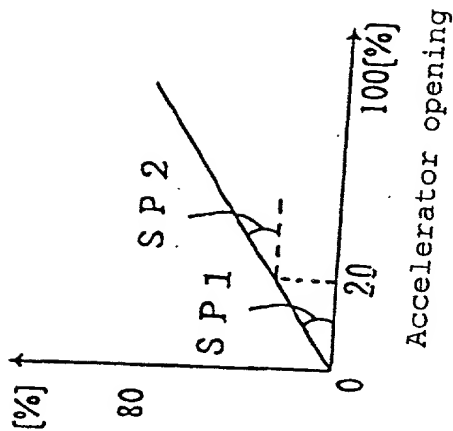




Rapid acceleration  
with small opening



Rapid acceleration  
with wide opening



Linear

FIG. 15(a)

FIG. 15(b)

FIG. 15(c)

FIG. 16

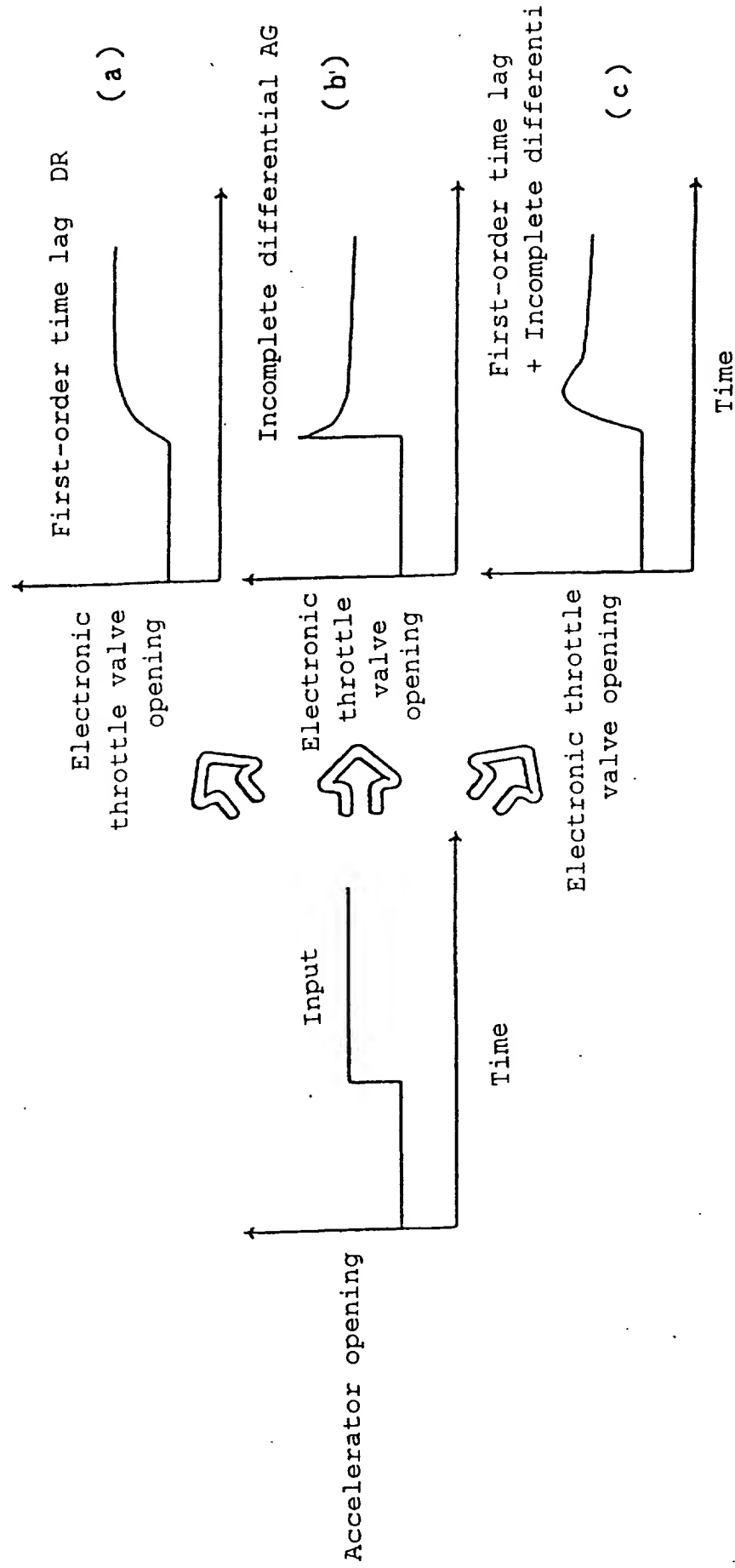




FIG. 17

SP <sub>1</sub>	SP <sub>2</sub>	DR	AG
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FIG. 18

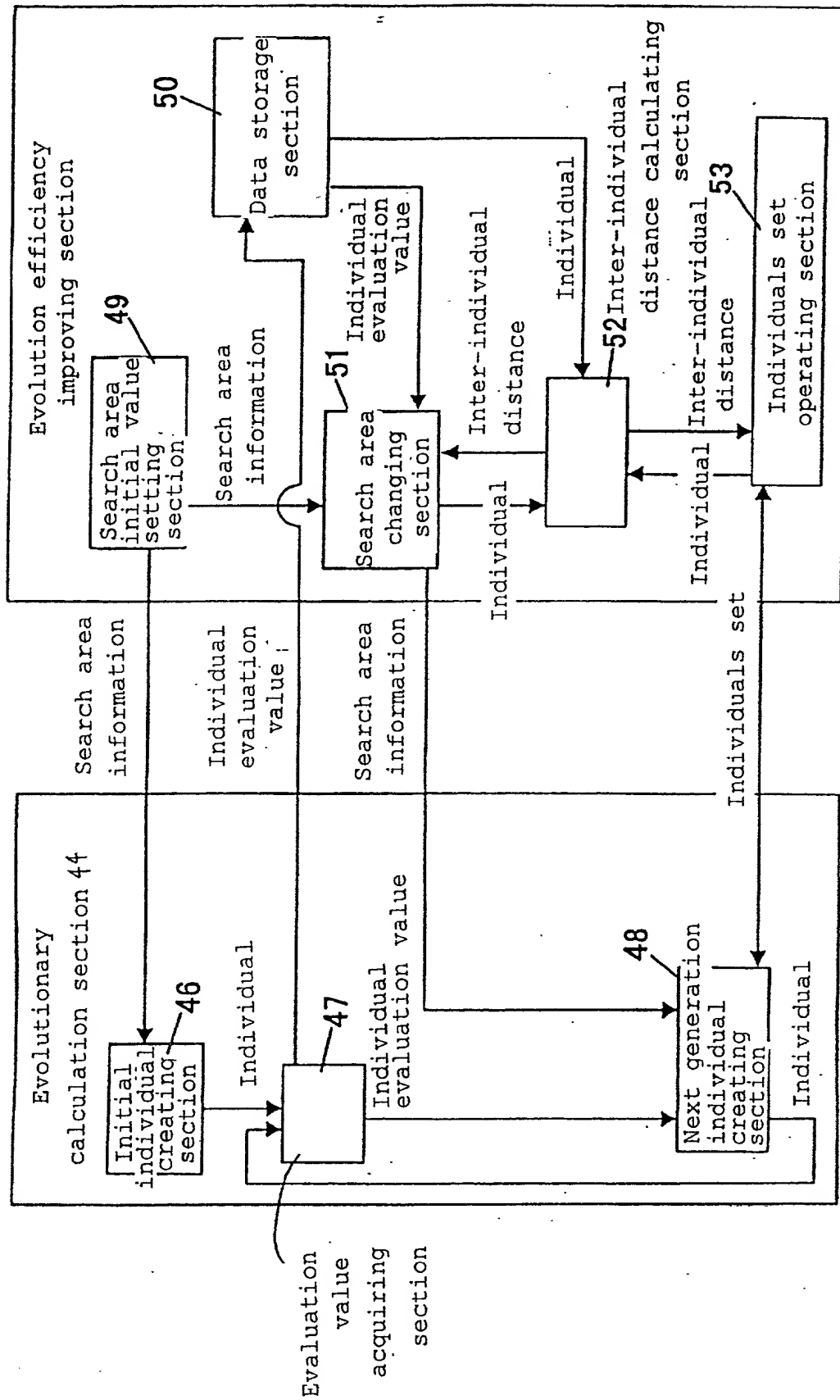


FIG. 19

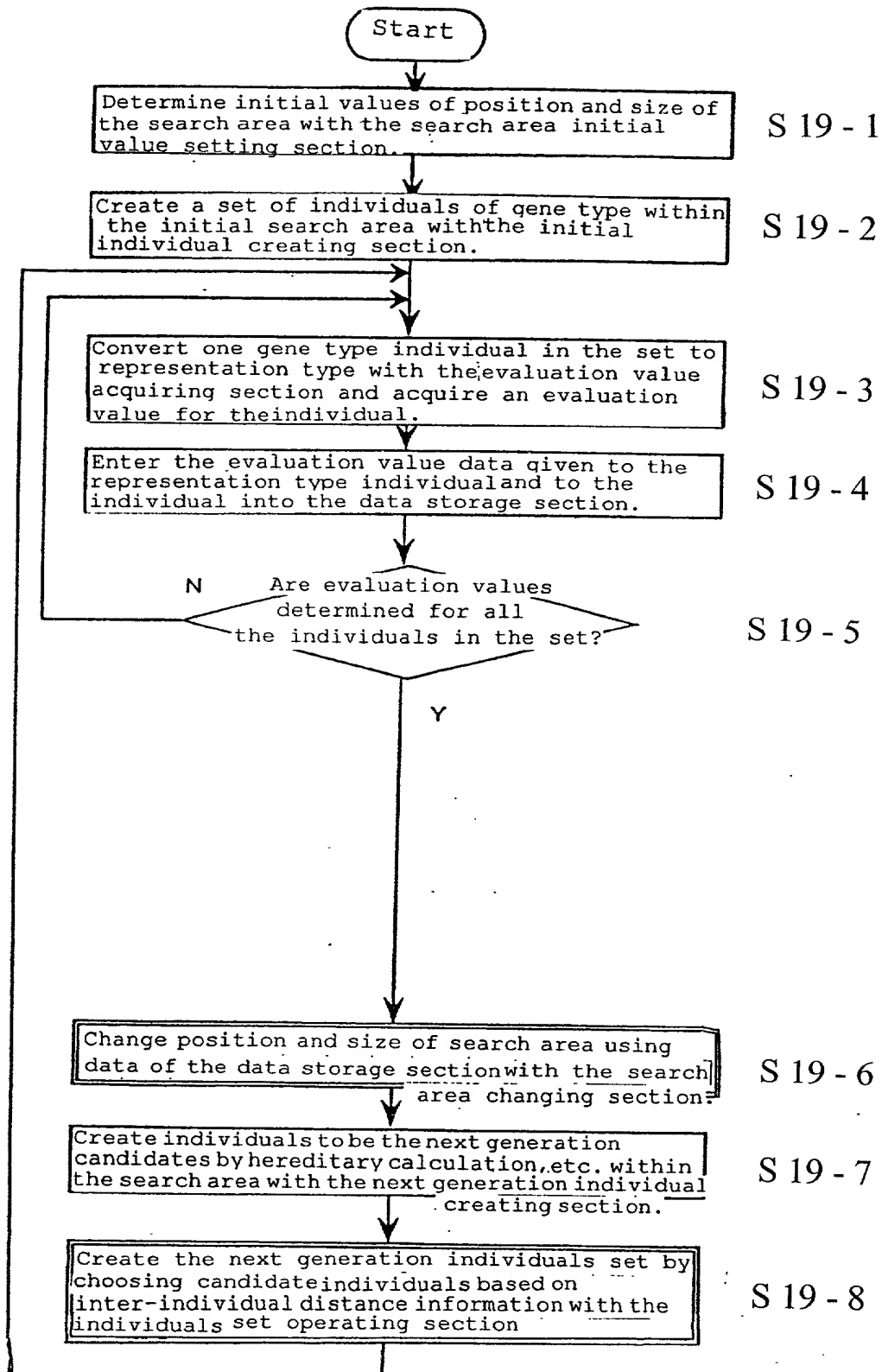


FIG. 20

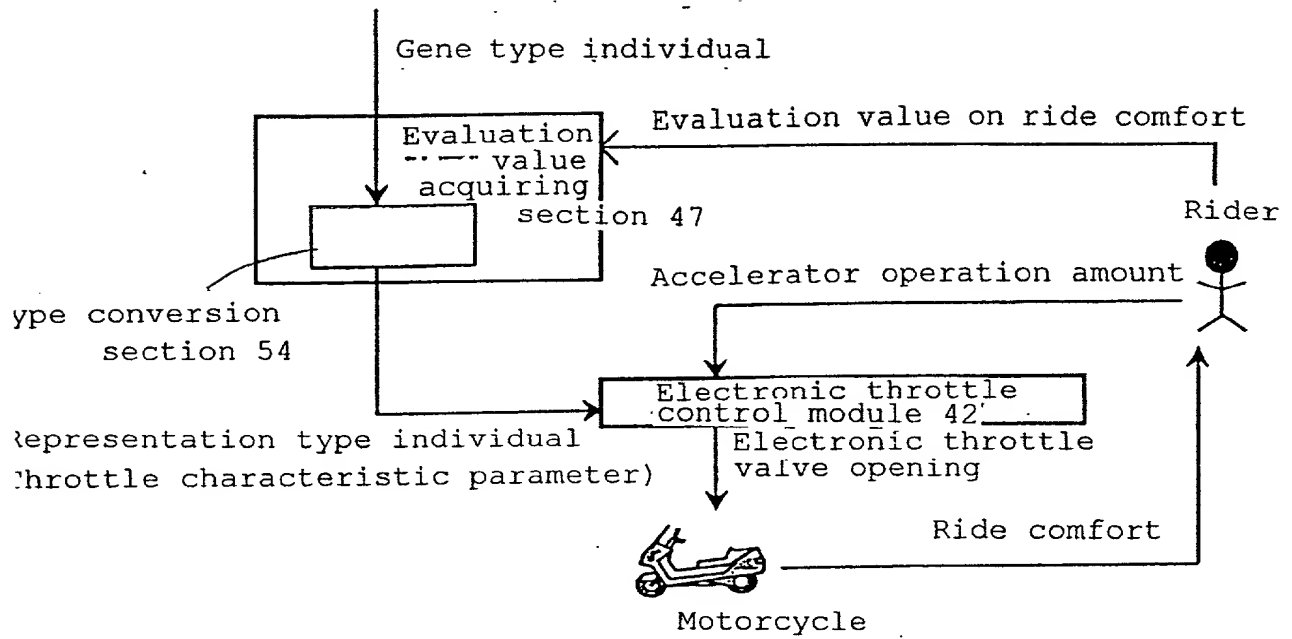


FIG. 21(a)

- ①: Change by best evaluation value  
(Determine irrespective of current search area size)

Best evaluation value Y	Size of next generation search area (Center-to-edge distance)			
	SP1	SP2	DR	AG
$0 \leq Y < 50$	25	25	30	30
$50 \leq Y < 70$	20	20	25	25
$70 \leq Y < 90$	15	15	20	20
$90 \leq Y \leq 100$	10	10	15	15

FIG. 21(b)

- ②: Change by best evaluation value  
(Change based on current search area size)

Best evaluation value Y	Search area size (Amount of change in center-to-edge distance)			
	SP1	SP2	DR	AG
$0 \leq Y < 50$	+5	+5	+5	+5
$50 \leq Y < 70$	0	0	0	0
$70 \leq Y < 100$	-5	-5	-5	-5

FIG. 22

Create the next generation candidate individuals at constant intervals in all-inclusive manner within the search area.

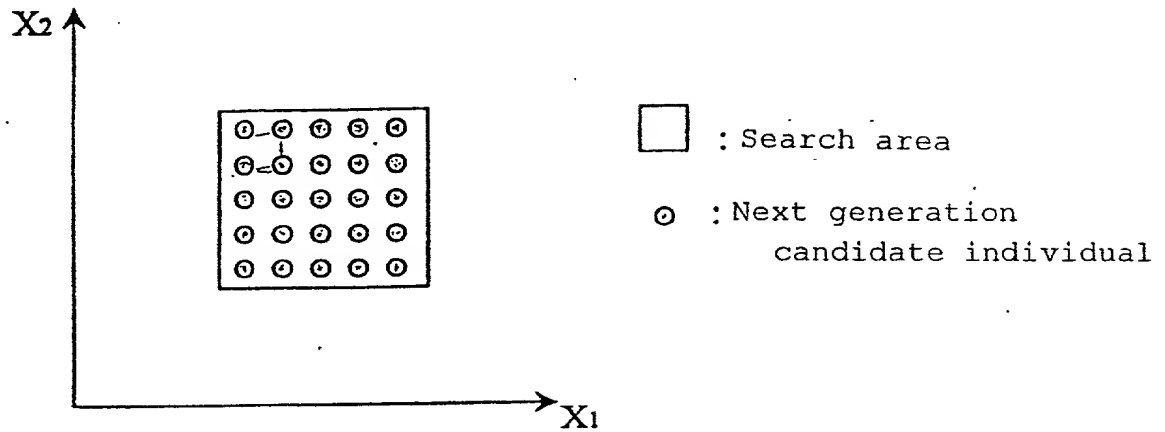


FIG. 23

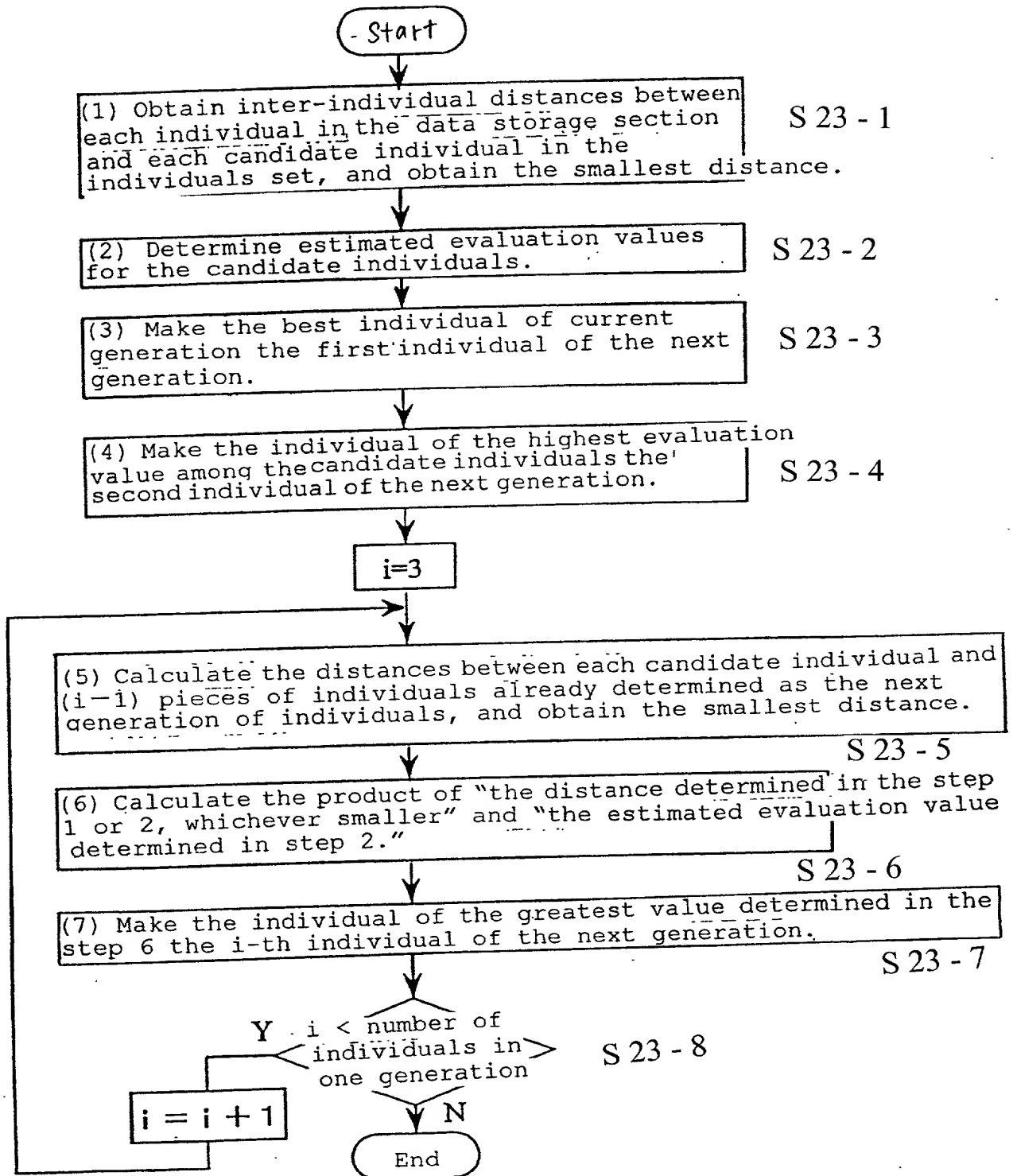
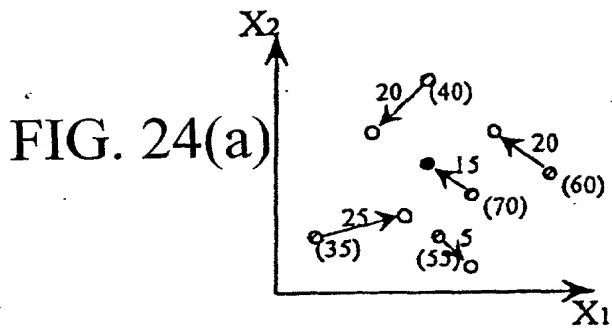


FIG. 24(a)



(60): Estimated evaluation value

○ :Individuals created so far.  
(Individuals in the data storage section)

⊙ :Next generation candidate individuals

● :Individuals chosen for the  
next generation

25 → :Inter-individual distance

FIG. 24(b)

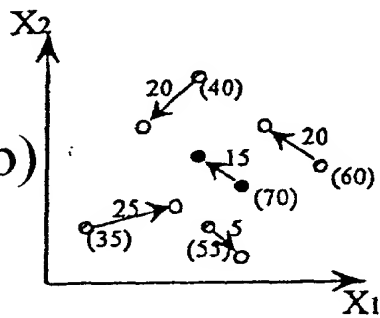


FIG. 24(c)

